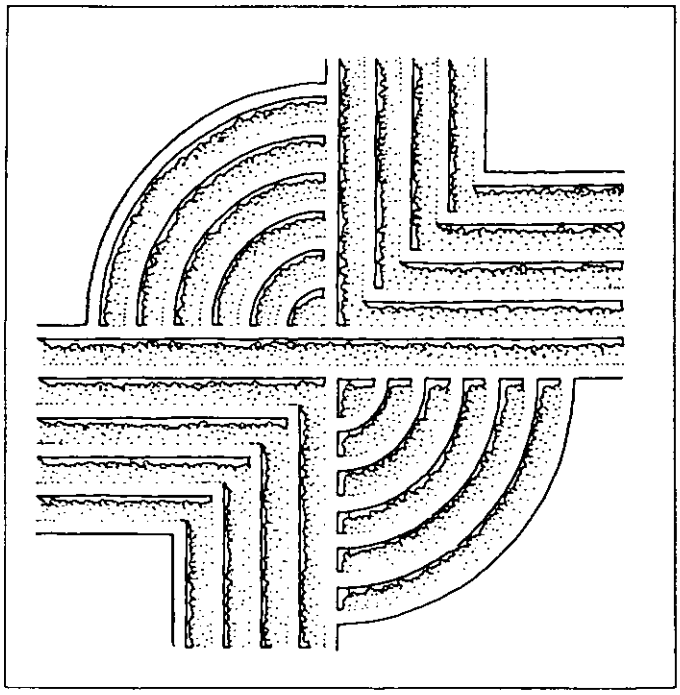
ARCHAEOLOGICAL TESTING AT 38BU861, A MIDDLE WOODLAND SHELL MIDDEN ON HILTON HEAD ISLAND, BEAUFORT COUNTY, SOUTH CAROLINA



CHICORA FOUNDATION RESEARCH CONTRIBUTION 120

ARCHAEOLOGICAL TESTING AT 38BU861, A MIDDLE WOODLAND SHELL MIDDEN ON HILTON HEAD ISLAND, BEAUFORT COUNTY, SOUTH CAROLINA

Prepared For:
Mr. Frank Habit, II
Habit Corporation
PO Box 6059
Hilton Head Island, SC 29938

Prepared By:
Michael Trinkley
Natalie Adams

Chicora Research Contribution 120

Chicora Foundation, Inc.
PO Box 8664 ▫ 861 Arbutus Drive
Columbia, South Carolina 29202
803/787-6910

October 19, 1993

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGEMENTS

We want to thank the developer of the tract, Mr. Frank Habit, II of The Habit Corporation for his support of this research. Ms. Jill Foster, Long Range Planner with the Town of Hilton Head Island assisted us in obtaining the necessary permits for the investigation. Mr. Michael Taylor and Ms. Barbara Lothrop assisted us in the curation of the recovered materials at the Hilton Head Island Museum. Mr. Keith Derting assisted in tracking down site information.

We also wish to extend our appreciation to the Hilton Head Chapter of the Archaeological Society of South Carolina which supported our investigations at 38BU861. In particular, the volunteer efforts of Mr. Lou Camilleri, Mr. Tom Culligan, Mr. Tom Griffin, Mr. Von Hoffman, Ms. Barbara Pritchard, Ms. Jennifer Schmidt, Mr. and Mrs. Alan Sulyk, Mr. Gerry Thompson, and Ms. Gretchen Wood allowed us to accomplish much more during the study than would have been possible otherwise. Their efforts to preserve and protect the heritage of Hilton Head Island are remarkable and should stand as an example to other groups throughout the state.

INTRODUCTION

Background

Archaeological site 38BU861 was first recorded by Chicora Foundation as a result of a reconnaissance level archaeological survey conducted for the Town of Hilton Head Island in 1986 (Trinkley 1987). The site was described as "a shell midden eroding along [the] marsh edge" and measuring about 200 feet along the shore and perhaps 30 feet inland (these boundary measurements, of course, were based on reconnaissance techniques, primarily visual inspection of eroding banks as outlined by Trinkley 1987:40-41). No cultural material were collected and the site was recommended as potentially eligible for inclusion on the National Register (Trinkley 1987:48; Figure 1).

Additional survey of the tract containing the site was conducted by Brockington and Associates in 1992 (Jones n.d.). Curiously the field investigator remarked that the site location could not be identified (Jones n.d.:27), indicating that perhaps the detailed mapping available from the Town was not consulted, and also remarking that 38BU861 was not mentioned in the final report, suggesting a lack of familiarity with the report. Regardless, the site was correctly identified as 38BU861 and Jones implemented a program of intensive shovel testing at approximately 100 foot intervals. A total of 55 shovel tests were placed within what eventually were defined as the site (Jones n.d.:28) revealing what was called a "moderately dense" midden. The author indicates that the definition of "moderately dense" is "that the shell encountered in the shovel tests was 'dense' enough to prevent removal of all of the shell from the test without some degree of effort" (Jones n.d.:27-28). No further information, however, is available on the depth of the midden or site stratigraphy. Eighteen of the 55 shovel tests were positive, with the site being divided into two "areas," presumably on the basis of artifact density and dispersal. Materials recovered included Stallings, Deptford, and Wilmington wares, as well as a single lithic. No mention was made of ethnobotanical or faunal remains, excepting the presence of unspecified shell. The site was defined as 450 by 500 feet.

In spite of this seemingly intensive shovel testing, Jones (n.d.:30-31) recommended the site as potentially eligible and suggested additional testing, specifically:

> limited shovel testing in portions of the site to determine more fully the distribution of artifacts within the site. Also, the controlled excavation of six (6) 1 m by 2 m units should b undertaken to determine the stratigraphic nature of the shell middens and their potential to produce other ecofacts related to the diet of the former occupants (Jones n.d.:31).

The research context of this work, and the potential eligibility, included the site's ability to answer questions:

> regarding the function or use of the site, or of specific locales within the site . . . . regarding the sites [sic] role in the regional settlement/subsistence pattern of the sea islands . . . . [and] the changing patterns of resource procurement through time (Jones n.d.:30).

Eligibility would be based on:

> an adequate assemblage of artifacts, and/or cultural deposits that can be directly

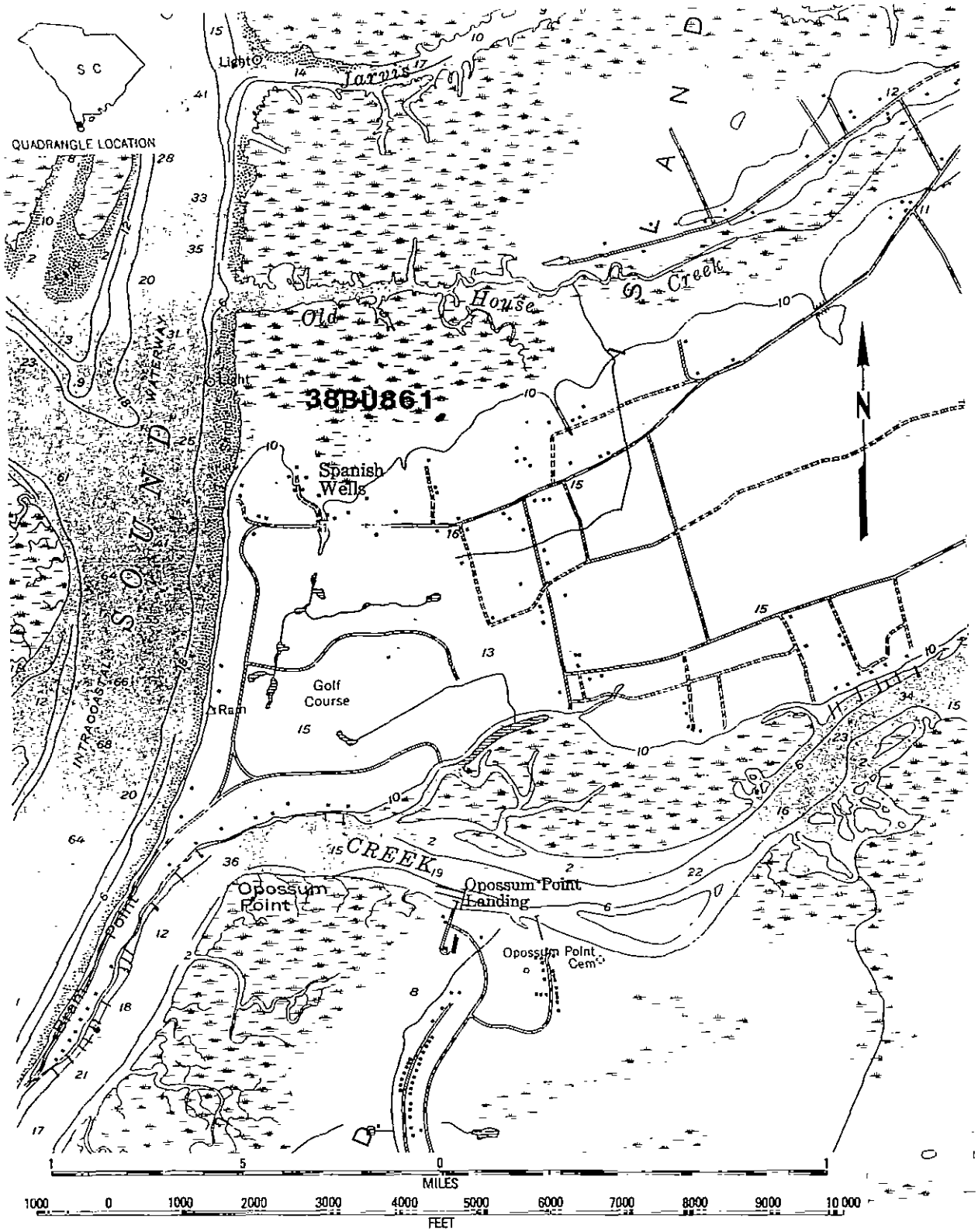


Figure 1. Location of 38BU861 on Hilton Head Island (base map is USGS Bluffton 1956PR71).

> related to specific activities that occurred at the site (e.g., features or occupation horizons), the preservation of ethnobotanical or zooarchaeological remains, or a combination of these . . . . An "adequate" artifact assemblage would include artifact types that can be analyzed to determine how they were used prior to deposition, a large number of artifacts within a single type/class (e.g., lithic waste fragments), and an assemblage with many types/classes represented (Jones n.d.:20-21).

Other important data sources would be environmental data (e.g., geoarchaeological, palynological) and the "presence of temporally diagnostic remains (Jones n.d.:21).

In September Chicora Foundation was contacted by Habit Corporation requesting that we further evaluate 38BU861 to determine the site's potential eligibility for inclusion on the National Register. In reviewing the previous survey and report by Jones we remarked that the recommendations previously offered provided a reasonable approach to determining eligibility. The goal of the work was four fold:

- to determine if the shell midden is intact (or alternatively, has been plowed),
- to determine the density and diversity of cultural materials (such as lithics and pottery) present,
- to determine if floral and faunal materials are present in the middens, and
- to determine if sub-midden features can be detected on the basis of this additional testing.

Our only changes in the strategy proposed by Jones was to substitute auger testing for additional shovel testing, reduce the excavations from six to four units, and to concentrate on one site area rather than diluting the efforts by attempting to explore what amounted to approximately five acres.

Chicora's proposal was approved by the Habit Corporation on September 25, 1993 and the excavations were conducted by Natalie Adams and Michael Trinkley on October 4 through 6. A total of 25 person hours were devoted to the work by these individuals, although an additional 51 person hours were contributed by volunteers, all members of the Hilton Head Chapter of the Archaeological Society of South Carolina. This unique blend of professional and avocational archaeological efforts allowed the project to explore a variety of methodological approaches, and collect a range of data, which would not otherwise have been possible in the scheduled three days.

Scope and Goals

The scope and goals of this project have been briefly mentioned from the perspective of the current property owner and the resolution of the administrative question surrounding National Register eligibility. In other words, adopting the basic approach of Jones (n.d.:20-21), we suggested that if the testing determined that several of the basic data sets were present (i.e., if the midden is intact, there are a variety of materials, if floral and faunal materials are present), then the site would likely be recommended as eligible for inclusion on the National Register. Alternatively, if the testing discovered that several of the data sets were not present or were of low quality (i.e., that the middens are badly plowed, contain a very low density of cultural materials, or lack floral and faunal remains), then the site would likely be recommended as not eligible for inclusion on the National Register.

The tacit assumption of this approach (as used originally by Jones and adopted for the current

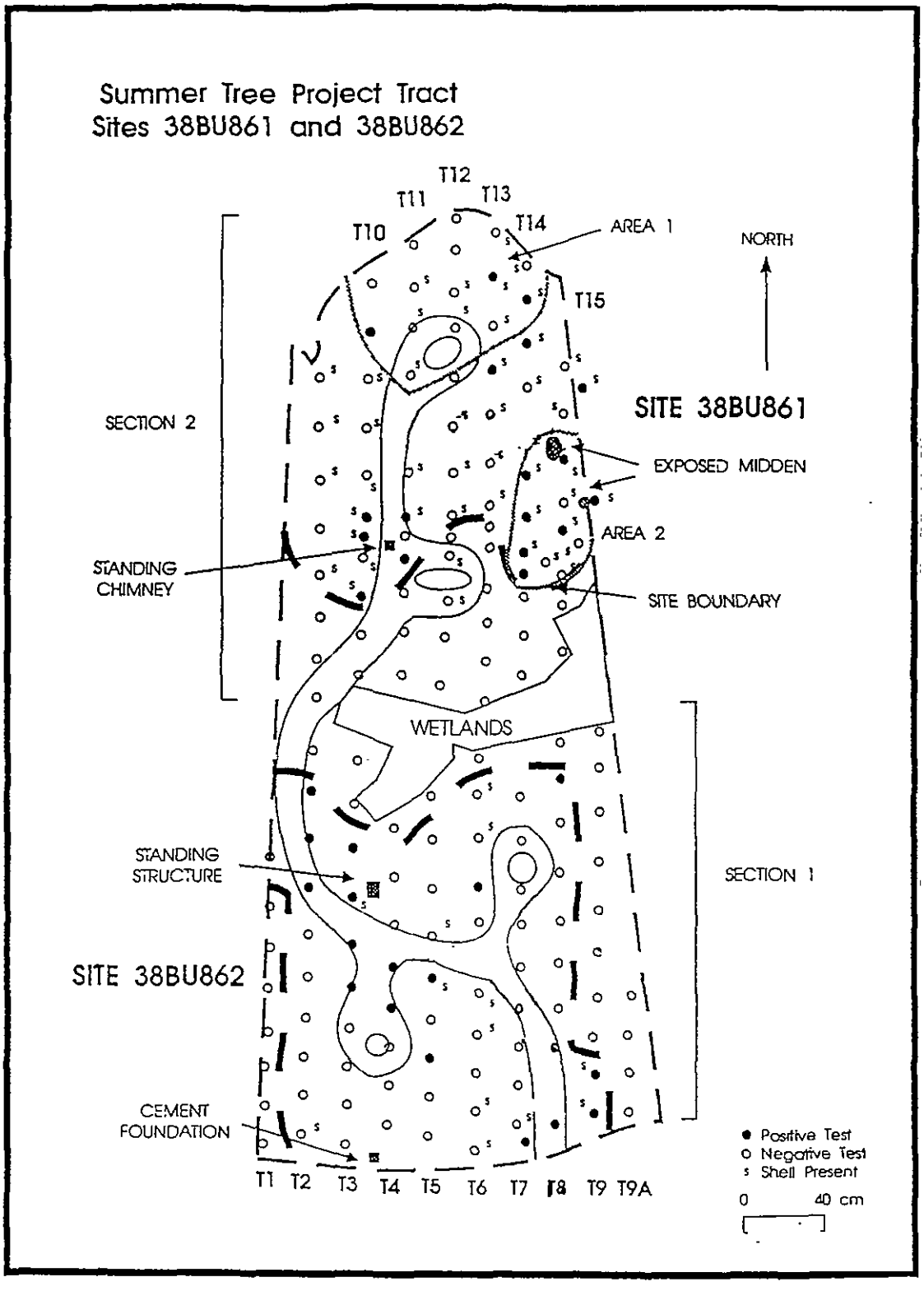


Figure 2. 38BU861 as defined by Jones (n.d.:24). Scale is in meters (not centimeters).

study) is that the presence of the data sets will allow the site to address a broad range of important research questions. Alternatively, the absence of these various attributes would make the site less able to address the questions.

Recently the State Historic Preservation Office has emphasized the need to carefully detail the research questions and examine how the site being evaluated might be able to address those questions. As discussed by Trinkley (1993) this approach is dependent on more intensive investigations and, obviously, better funding. The investigations at 38BU861 offer an opportunity to explore a broad range of methodological orientations, investigative techniques, and research questions. Since the testing was supported by the very generous volunteer efforts of the Archaeological Society of South Carolina, Hilton Head Chapter, it is possible to explore many of these issues, without any additional cost to the client, offering some guidance to both the discipline and the State Historic Preservation Office.

The primary methodological orientation explored is the advisability of concentrating testing efforts on one site area, rather than diluting those efforts by examining the entire site. The obvious simplistic question is whether it is better to know a great deal about a small part of the universe, or whether it is better to know a little something about much of the universe. In the past archaeologists have traditionally selected the latter, believing that it was necessary to make management decisions. This has resulted in many correct decisions, enhancing the reputation of the approach. We believe, however, that as there is an increasing demand for higher quality research on the part of the State Historic Preservation Office, this can be balanced by "fragmentation" of research questions at sites to achieve cost effective research. In other words, to develop some cost control it may be better to examine a few questions in one site area then to try to dilute data recovery efforts (and funds) by examining every practical question. Obviously this one testing program is not intended to change the course of the discipline, but simply to reveal that alternative approaches **have validity and can address specific needs.**

A range of investigative techniques were explored by this research. Among the many worthy of further discussion, we chose to concentrate on six:

- the cost-effectiveness of volunteers,
- the usefulness of very close interval contour mapping for identification of midden areas,
- the usefulness of close interval auger testing for artifact density and shell midden plotting, especially when contrasted with shovel testing at various intervals,
- the benefits of water screening versus dry screening,
- the costs and benefits of sampling using a variety of screen sizes, and
- the ability to conduct "field analysis" sufficient to quickly evaluate the potential of sites to address research questions.

The goal in this research was not to concentrate on which strategy might be "best," but rather on how the various strategies could contribute to our formation, and answering, of various research questions. In other words, could implementation of different data gathering strategies result in better definition of research goals and strategies. Obviously our concern was that it seemed unlikely that gathering data the same way it had always been gathered would result in new approaches or findings. We were seeking new ways of finding out new information.

Since this was a testing program, we decided that we would follow an inductive approach -- we would explore the site using techniques which were likely to maximize data return and then use the gathered information to determine which, if any, research questions could be addressed by the data the site was likely to yield. Obviously there are a range of research questions formulated by the discipline surrounding shell middens, so we are not operating in a research vacuum; we are simply anticipating that the site will be able to address some questions, but probably not all. Hence, it is appropriate to examine the significance of those questions which the site is able to answer.

Curation

The field notes, photographic materials, and artifacts resulting from Chicora Foundation's investigations are being curated at The Environmental and Historical Museum of Hilton Head Island as Accession Number 1993.1. The artifacts from the testing are being cataloged using the Museum's lot provenience system and are being cleaned and/or conserved as necessary. All original field notes and duplicate copies are being provided to the curatorial facility on pH neutral, alkaline buffered paper and the photographic materials were processed to archival permanence.

These investigations were conducted under Archaeological Investigations Approval 93-5 issued by the Town of Hilton Head Island. In compliance with this permit Chicora Foundation has filed a copy of this study with both the Town and The Environmental and Historical Museum of Hilton Head Island.

NATURAL SETTING

Physiographic Province

Beaufort County is located in the lower Atlantic Coastal Plain of South Carolina and is bounded to the south and southeast by the Atlantic Ocean, to the east by St. Helena Sound, to the north and northeast by the Combahee River, to the west by Jasper and Colleton counties and portions of the New and Broad rivers. The mainland primarily consists of nearly level lowlands and low ridges. Elevations range from about sea level to slightly over 100 feet above mean sea level (MSL) (Mathews et al. 1980:134-135). Hilton Head is located between Port Royal Sound to the north and Daufuskie Island to the south. The island is separated from Daufuskie by Calibogue Sound and from the mainland by a narrow band of tidal marsh and Skull Creek. Between Hilton Head and the mainland are several smaller islands, including Pinckney and Jenkins islands.

Hilton Head is about 11.5 miles in length and has a maximum width of 6.8 miles, incorporating just under 20,000 acres of highland and 2,400 acres of marsh. Elevations range from sea level to 21 feet mean sea level (MSL) at the top of the highest natural beach ridges (Mathews et al. 1980).

Hilton Head is situated in the Sea Island section of South Carolina's Coastal Plain province. The coastal plain consists of the unconsolidated sands, clays, and soft limestones found from the fall line eastward to the Atlantic Ocean, an area of more than 20,000 square miles or about two-thirds of South Carolina (Cooke 1936:1-3). Elevations range from just above sea level on the coast to 600 feet MSL adjacent to the Piedmont province. The coastal plain is drained by three large through-flowing rivers -- the Pee Dee, Santee, and Savannah -- as well as by numerous smaller rivers and streams. On Hilton Head there are three major drainages, Broad Creek which flows almost due west into Calibogue Sound, Jarvis Creek which empties into Mackay Creek just north of Broad Creek, and Old House Creek which parallels Jarvis Creek to the south and also empties into Calibogue Sound.

Hilton Head is different from most of the other barrier islands since it has a both a different shape and also a Pleistocene core with a Holocene beach ridge fringe. To understand the significance of this situation, it is important to realize that technically the sea islands and the barrier islands are different from a historical perspective. The classic sea islands of colonial and antebellum fame (such as James, St. Helena, and Sapelo islands) are erosional remnants of coastal sand bodies deposited during the Pleistocene high sea level stands. They are crudely elongate, parallel to the present day shoreline, and rectangular in outline. Their topography is characterized by gentle slopes, poorly defined ridges and swales, and elevations from 5 to 35 feet MSL. Typical barrier islands include Pawleys, Kiawah, and Hunting islands. Some islands, such as Hilton Head, Daufuskie, and St. Catherines, have an oceanward fringe of beach dune ridges which were constructed during the Holocene high sea level stands (Mathews et al. 1980:65-71; Ziegler 1959). Ziegler (1959:Figure 6) suggests that Hilton Head Island is composed of several sea or erosion remnant islands, joined together by recent Holocene deposits.

Site 38BU861 is situated on the southern high ground overlooking the marsh of Old House Creek, about 0.4 mile from Calibogue Sound (Figure 1). The site specific topography is generally level, gently sloping inland from a marsh elevation of about 7 feet MSL to a high elevation of about 11 feet MSL. While the site apparently extends off the survey tract to the east, the western boundary is a small slough at the western edge of the parcel, perhaps representing a remnant fresh water spring.

This site is associated with a point of land, similar to a number of other Hilton Head sites and fitting the informal model proposed on the basis of Chicora's 1986 survey (Trinkley 1987:57). Erosion along Old House Creek is limited to period of high seasonal tides and storms, limiting the ability to accurately locate shell middens by traditional shoreline surveys.

Geology and Soils

The Sea Island coastal region is covered with sands and clays originally derived from the Appalachian Mountains and which are organized into coastal, fluvial, and aeolian deposits. These deposits were transported to the coast during the Quaternary period and were deposited on bedrock of the Mesozoic Era and Tertiary period. These sedimentary bedrock formations are only occasionally exposed on the coast, although they frequently outcrop along the fall line (Mathews et al. 1980:2).

The Pleistocene sediments are organized into topographically distinct, but lithologically similar terraces parallel to the coast. The terraces have elevations ranging from 215 feet down to sea level. These terraces, representing previous sea floors, were apparently formed at high stands of the fluctuating, although falling, Atlantic Ocean and consist chiefly of sand and clay (Cooke 1936; Smith 1933:29). More recently, research by Colquhoun (1969) has refined the theory of formation processes, suggesting a more complex origin involving both erosional and depositional processes operating during marine transgressions and regression.

Cooke (1936) found that most of Hilton Head is part of the Pamplico terrace and formation, with a sea level about 25 feet above the present sea level. Colquhoun (1969), however, suggests that Hilton Head is more complex, representing the Princess Anne and Silver Bluff Pleistocene terraces with corresponding sea levels of from 20 to 3 feet.

Another aspect of Sea Island geology to be considered in these discussions is the fluctuation of sea level during the late Pleistocene and Holocene epochs. Prior to 15,000 B.C. there is evidence that a warming trend resulted in the gradual increase in Pleistocene sea levels (DePratter and Howard 1980). Work by Brooks et al. (1989) clearly indicates that there were a number of fluctuations during the Holocene. Their data suggest that as the first Stallings phase sites along the South Carolina coast were occupied about 2100 B.C. the sea level was about 3.9 feet lower than present. However, by 1600 B.C., when a number of Thom's Creek shell rings were occupied, the sea level had fallen to a level of about 7.2 feet lower than present levels. By the end of the Thom's Creek phase, about 900 B.C., the sea level had risen to a level 2.6 feet lower than present, but over 4.5 feet higher than when the shell rings were first occupied. Quitmyer (1985) does not believe that the lower sea levels at 2100 B.C. would have greatly altered the estuarine environment, although drops of 10 feet would have reduced available tidal resources.

Data from the nineteenth and twentieth centuries suggest that the level is continuing to rise. Kurtz and Wagner (1957:8) report a 0.8 foot rise in Charleston, South Carolina sea levels from 1833 to 1903. Between 1940 and 1950 a sea level rise of 0.34 feet was again recorded at Charleston. These data, however, do not distinguish between sea level rise and land surface submergence.

Within the Sea Islands section of South Carolina the soils are Holocene and Pleistocene in age and were formed from materials that were deposited during the various stages of coastal submergence. The formation of soils in the study area is affected by this parent material (primarily sands and clays), the temperate climate, the various soil organisms, topography, and time.

The mainland soils are Pleistocene in age and tend to have more distinct horizon development and diversity than the younger soils of the Sea Islands. Sandy to loamy soils predominate in the level to gently sloping mainland areas. The island soils are less diverse and less well developed, frequently

lacking a well-defined B horizon. Organic matter is low and the soils tend to be acidic. The Holocene deposits typical of barrier islands and found as a fringe on some sea islands, consist almost entirely of quartz sand which exhibits little organic matter. Tidal marsh soils are Holocene in age and consist of fine sands, clay, and organic matter deposited over older Pleistocene sands.

There are three main soil associations on Hilton Head. The Wando-Seabrook-Seewee association consists of excessively well drained to somewhat poorly drained sands found on the interior. The Fripp-Baratari association consists of excessively drained and poorly drained sands found along the Atlantic shore of the island. The Bohicket-Capers-Handsboro association consists of very poorly drained mineral and organic marsh soils (Stuck 1980). The soils in the immediate vicinity of 38BU861 consist of excessively drained, rapidly permeable Wando Series soils that formed in thick sandy Coastal Plain sediment (Stuck 1980). Along the western margin, correlating the relic slough, are the poorly drained Rosedhu Soils, often found in low elevations. These soils are clearly defined in the field by elevation, with the Wando soils dominating the elevations above 9 feet MSL.

Floristics

Hilton Head today exhibits four major ecosystems: the coastal marine ecosystem where land has unobstructed access to the ocean, the maritime ecosystem which consists of the upland forest area of the island, the estuarine ecosystem of deep water tidal habitats, and the palustrine ecosystem which consists of essentially fresh water, non-tidal wetlands (Sandifer et al. 1980:7-9).

Mathews et al. (1980) suggest that the most significant ecosystem on Hilton Head is the maritime forest community. This maritime ecosystem is defined most simply as all upland areas located on barrier islands, limited on the ocean side by tidal marshes. On sea islands the distinction between the maritime forest community and an upland ecosystem (essentially found on the mainland) becomes blurred. Sandifer et al. (1980:108-109) define four subsystems, including the sand spits and bars, dunes, transition shrub, and maritime forest. Of these, only the maritime forest subsystem is likely to have been significant to either the prehistoric or historic occupants and only it will be further discussed. While this subsystem is frequently characterized by the dominance of live oak and the presence of salt spray, these are less noticeable on the sea islands than they are on the narrower barrier islands (Sandifer et al. 1980:120).

The barrier islands may contain communities of oak-pine, oak-palmetto-pine, oak-magnolia, palmetto, or low oak woods. The sea islands, being more mesic or xeric, tend to evidence old field communities, pine-mixed hardwoods communities, pine forest communities, or mixed hardwood communities (Sandifer et al. 1980:120-121, 437).

Several areas of Hilton Head evidence upland mesic hardwood communities, also known as "oak-hickory forests" (Braun 1950). These forests contain significant quantities of mockernut hickories as well as pignut hickory. Other areas are more likely to be classified as Braun's (1950:284-289) pine or pine-oak forest. Wenger (1968) notes that the presence of loblolly and shortleaf pines is common on coastal plain sites where they are a significant sub-climax aspect of the plant succession toward a hardwood climax. Longleaf pine forests were likewise a common sight (Croker 1979). Along Old House Creek, it is likely that the highland vegetation was dominated by the Oak-Hickory Forest, although land use patterns in the historic period quickly changed the vegetation of the area through settlement and cultivation.

The estuarine ecosystem in the Hilton Head vicinity includes those areas of deep-water tidal habitats and adjacent tidal wetlands. Salinity may range from 0.5 ppt at the head of an estuary to 30 ppt where it comes in contact with the ocean. Estuarine systems are influenced by ocean tides, precipitation, fresh water runoff from the upland areas, evaporation, and wind. The tidal range for

Figure 3. Auger testing in the study area, showing vegetation.

Hilton Head Island is 6.6 to 7.8 feet, indicative of an area swept by moderately strong tidal currents. The system may be subdivided into two major components: subtidal and intertidal (Sandifer et al. 1980:158-159). These estuarine systems are extremely important to our understanding of both prehistoric and historic occupation because they naturally contain such high biomass. The estuarine area contributes vascular flora used for basket making, as well as mammals, birds, fish (over 107 species), and shellfish.

The last environment to be briefly discussed is the freshwater palustrine ecosystem, which includes all wetland systems, such as swamps, bays, savannas, pocosins and creeks, where the salinities measure less than 0.5 ppt. The palustrine ecosystem is diverse, although not well studied (Sandifer et al. 1980:295). A number of forest types are found in the palustrine areas which attract a variety of terrestrial mammals. On Hilton Head the typical vegetation consists of red maple, swamp tupelo, sweet gum, red bay, cypress, and various hollies. Also found are wading birds and reptiles. It seems likely that these freshwater environs were of particular importance to the prehistoric occupants, but probably of limited importance to historic occupants (who tended to describe them in the nineteenth

EXCAVATIONS

Strategy and Methods

As previously indicated, the investigations at 38BU861 incorporated a variety of traditional archaeological research practices (for example, excavation of 5-foot units with horizontal and vertical control), as well as a range of additional strategies.

In order to allow comparisons to be valid between 38BU861 and similar sites, it was essential that field techniques, in so far as possible, be uniform. The site grid for auger testing was tied into the previously established South Carolina State Plane Coordinates, with N 31,800,000 E 2,070,100 serving as the southwest corner of the initial grid (the grid was later expanded to the south, as shown in Figure 4). Auger test points were established every 20 feet initially forming a 100 foot square (and incorporating 36 points). The additional auger testing, intended to examine artifact concentrations in an interior area, extended the grid to the south by 100 feet, although only 40 additional feet were explored east-west (for 15 additional data points or a total of 51 points).

Horizontal control for the sequentially numbered excavation units was maintained by reference to the state plane coordinates grid, with all units oriented magnetic north-south. Vertical control was maintained through the use of a mean sea datum established near current development activities and transferred through the woods to the research area.

Stratigraphy tended to be uniform. Excavations placed on shell middens revealed from 1.1 to 0.6 foot of compact shell midden overlying a yellow sand subsoil. Non-shell midden areas exhibited 0.8 foot of dark gray-brown sandy loam (often with small quantities of shell) overlying the same yellow sand subsoil (Figure 4). Toward the western edge of the property the auger tests consistently revealed soil profiles more consistent with the Rosedhu Soils (including reduced gray/black A horizon silts with no shell). The middens consisted almost entirely of oyster, with small quantities of knobbed whelk, hardshell clam, and ribbed mussel. No direct evidence of other whelks, periwinkles, cockles, or oyster drills was found.

Both midden and non-midden soils were dry screened through ¼-inch mesh with a third of the fill collected and water screened through 1/8-inch mesh. One third of the water screening spoil was collected and water screened through 1/16-inch mesh. Since this was a testing program we did not collect column samples for shellfish analysis (although hand sorted samples were collected), nor did we calculate shell:soil volumes[1]. Both are very useful techniques and were not incorporated strictly as a matter of convenience, concentrating instead on different research and analytic approaches.

---

[1] Typically a column sample would be collected from each unit which exhibited a shell midden component. These column samples, 2.25 feet square per 10 foot unit, are designed to provide a 5% sample of the midden. Each column sample is removed and weighed prior to screening. All shell is then weighted and bagged for detailed analysis. The weight of total column minus the weight of the shell provides the weight of the soil in the column and thus allows a shell:soil ratio for each midden to be calculated.

Figure 4. Test Pit 1 at the base of the excavations, view to the south.

Soil samples were routinely collected from each zone. Units were troweled at the top of the subsoil, photographed in black and white and color, and plotted. Features were plotted and photographed, but were not excavated during this testing effort. Plastic was laid in the base of the units, the profiles bulked and the units backfilled prior to the end of the project.

The auger tests were excavated using a 12-inch two-person mechanical auger to a typical depth of 1.2 foot, resulting in excavations approximately 0.9 cubic feet in volume. The fill was dry screened through $\frac{1}{4}$-inch mesh with all collected shell weighed in the field before being discarded. Notes were routinely made on soil stratigraphy and all auger tests were backfilled.

The cleaning of artifacts was begun on Hilton Head during the field work and completed in Columbia. Cataloging of the specimens is being conducted at the Chicora laboratories in Columbia. All artifacts are being wet cleaned, at which time they are also being evaluated for conservation needs. Thus far all of the prehistoric materials are stable and no conservation treatments appear to be necessary.

Methodological Orientation

As previously discussed, in many respects the most unusual aspect of this research is its emphasis on one small portion of the total site. While Jones (n.d.) defined a site area encompassing over 5 acres, this research chose to concentrate on an area of about 0.3 acre, representing an

opportunistic sample[2] of just under 7%. By all accounts this is a very small sample. While the testing did not cover the entire site situated on the development tract, it did very effectively and efficiently explore the research potential of this one specific site area.

Simply put, we are less concerned with confirming that the findings are representative of the site as a whole than we are with determining what research questions 38BU861 can appropriately address. Consequently it was an appropriate, and cost-effective, choice to concentrate our limited efforts in one site area. Obviously other researchers could take a different approach, depending on their orientation -- no one orientation is correct or excludes other strategies.

Investigative Techniques

We have previously outlined a series of six, relatively unusual, techniques incorporated into this research. Part of our research effort was directed at determining the effectiveness of these efforts for assisting in cost-effective evaluation of site significance.

The first issue concerned the **cost-effectiveness of volunteers.** Traditionally archaeologists conducting compliance studies have not used volunteers. Certainly there are a range of reasons for this decision, including liability posed by volunteers, their lack of training, a perceived lack of dedication, and a concern over meeting strict time schedules. While it is possible that any or all of these may be appropriate concerns under some circumstances, none were valid for our work at 38BU861. Chicora Foundation has developed a detailed protocol for working with volunteers, predicated on the belief that volunteers are offering something more valuable even than money -- their time. Our volunteer program ensures that volunteers are provided with the information necessary to make the work experience safe and enjoyable. Our coordination with local leaders ensure that a network of dependable volunteers is aware of the research needs. Volunteers, while perhaps not trained in anthropology, are providing their services out of a love for the discipline, not for monetary reward. Consequently we have found that most are very careful, conscientious, and exceedingly fast learners. In sum, the volunteers provided dependable, dedicated, and interested assistance. They allowed research to be conducted which would not otherwise be possible.

During the current study 67% of the person hours were contributed by volunteers. Since coordination of volunteers was arranged by the local chapter of the Archaeological Society of South Carolina, our involvement was limited to faxing information concerning the site and volunteer participation, as well as brief introductions to the site and the work we were performing. Of course, this study is also being provided to all of the volunteers, as a way of thanking them for their involvement.

Perhaps the only real draw-back to volunteers is that their availability is not certain *when the proposal is being written*. There may be local events or other activities which preclude their participation. Likewise, some areas tend to have more volunteers than others or have volunteers with more flexible schedules. Volunteers should be incorporated in all possible projects. They should be used to expand on basic research, allowing areas of exploration which would not otherwise be possible. They should not be used to replace or reduce paid crews essential for the main body of the

---

[2] There was no effort to select any specific marsh portion of the site and the area incorporated into this study was simply the first area reached during the property walk over. The area investigated corresponds to western portion of what Jones (n.d.:24) identified as Area 1. In this respect it appears to have no special significance, not being situated in an area of especially dense middens, middens visible on the surface, or areas which produced significant artifact concentrations. In fact, this site area might possibly qualify as a "fringe area."

investigations.

The second area of methodological research examined the **usefulness of very close interval contour mapping for identification of midden areas.** Traditionally archaeologists have used a 1 foot contour interval on most low country midden sites. Typically these reveal natural topography, but fail to reveal any meaningful information concerning the middens. This study was predicated on the belief that too often intra-site shell midden studies are blind. They fail to take into account any detailed information on shell midden locations and sizes. Only middens actually investigated are included on mapping, leaving one with the mistaken impression that only a few middens are present, when actually a large number exist.

During the current investigations we explored the potential of generating topographic maps at 0.2 to 0.5 foot contour intervals. The goal was to determine at what level shell middens might become visible. The data necessary to generate contour maps at this interval can be collected rapidly if an auger test grid has previously been established. During the current study approximately 2 person hours were devoted to collecting the topographic data, with an additional 4 person hours devoted to manipulations (which would not be necessary if a variety of contour intervals were not being explored).

We found that middens typically became visible at about a 0.3 foot contour interval, with definition improving at a 0.2 foot interval. At a 0.1 foot interval the detail was unrealistically complex and middens were obscured with "ground clutter."

The usefulness of **close interval auger testing** for artifact density and shell midden plotting was the third area of study. We have previously found that intervals of 10 to 20 feet are necessary at historic sites to provide reasonable definition of structural locations. It seems only reasonable that similarly close interval studies would provide better discrimination of prehistoric details, especially related to artifact concentrations, midden locations, and activity areas. We selected a 20 foot interval for the study based on our past experience with historic sites.

A very gross level of sampling was provided by the initial shovel testing at 100 foot intervals. As best as we can determine from Jones' map of the site, the study area was situated between three negative tests, only two of which produced shell, and a fourth test which produced four sherds but no shell. This is adequate only to indicate the possible (probable?) presence of a site, suggesting that the density of cultural materials increases toward the one positive test. When the density of cultural materials is examined from the 20 foot interval study, much greater detail is obvious. It is possible to identify specific midden areas, and perhaps even to speculate on occupation on (or off) middens.

Obviously it takes more time to test a site at 20 foot intervals than it does at 100 or even 50 feet, but the additional time is relatively minimal. Establishing the grid required 3 person hours, the auger testing required an additional 3 person hours, and the screening (including note taking and backfilling) required four person hours. The additional detail seems well worth the investment of time and, in fact, it seems unthinkable not to take advantage of the information that this close interval testing can provide.

We have selected augering over shovel testing for a variety of reasons. Perhaps foremost is that it ensures a consistency in data collection which is impossible with shovel testing. As Jones (n.d.:27-28) implies, shell middens can test the enthusiasm, and dedication, of those conducting shovel tests, while an auger permits much easier penetration of thick, densely packed middens. Auger tests allow better profiles, ensuring more accurate recordation of midden depths. The consistent size allows for uniform calculation of artifact or shell density, both impossible with shovel testing. Finally, auger testing is quicker than shovel testing conducted to the same standards of size, depth, and uniformity.

The fourth area involved the **benefits of water screening versus dry screening.** Traditionally archaeologists, even at shell middens, have relied on dry screening. It should be obvious that neither time or logistical "problems" should determine research strategy, yet water screening has been conducted primarily when soils would not permit dry screening, for exactly those reasons.

At 38BU861 we identified a source of water[3] about 1500 feet south of the site. Water screens were set up about 750 feet south of the site, with the soil wheel barrowed to that point. The water was delivered via 750 feet of 5/8-inch garden hose with no appreciable loss in pressure. We dry-screened all fill through ¼-inch mesh at the excavation site, transporting a third of the ¼-inch screened fill to the water screens were it was all washed through 1/8-inch mesh. A third of the water screened fill was then again water screened through 1/16-inch mesh.

This arrangement worked very satisfactorily, even for this short-term testing project. We estimate that approximately 1 person hour was spent transporting soil, with an additional 1.5 person hours spent setting up/breaking down the water screening area and tending the hose. Approximately 3 person hours were spent water screening 27 cubic feet of fill. An additional 3 person hours were spent sorting through the water screenings. The evaluation of this approach is considered below, in the discussion of the fifth methodological investigation.

The **costs and benefits of sampling using a variety of screen sizes** was the fifth area considered during this study. Archaeologists seem to have become wed to ¼-inch as though it were a divine edict. Of course there are pragmatic, or logistical, reasons for this, the most basic is that ¼-inch offers quick screening of most soils. Chicora has been advocating the use of 1/8-inch mesh for several years. In fact, during our study of 38BU833, also on Hilton Head Island, where midden was water screened through 1/8-inch mesh we remarked:

> this procedure resulted in the recovery of fish bone, increased recovery of charcoal, and a significantly greater confidence in the recovery rate [attributable to the use of water screening, not 1/8-inch mesh] . . . . The use of 1/8-inch mesh, while somewhat more time consuming, greatly increases the potential for the recovery of small faunal material -- if such remains are present to be found (Trinkley et al. 1992:20).

This is certainly no surprise to those who paid strict attention to the careful studies of Wing and Quitmyer (1985) at the Kings Bay shell middens. In quantified tests they found that fine screening produced a seven-fold increase in species identified and:

> the percentage of fish is 34% in the coarse screened sample and increases, relative to other organisms, to 76% and 91% in the two increasingly more finely screened samples (Wing and Quitmyer 1985:57).

At 38BU861 we found that the ¼-inch dry screening of the four test pits and 51 auger tests yielded no fish remains whatsoever. Fish remains were found **only** when the ¼-inch screened fill was subjected to water screening through 1/8-inch mesh. ***Failing the use of 1/8-inch mesh it would have been impossible to identify the presence of fish remains at the site, minimally leading to a distorted interpretation of the subsistence base.*** Initial results of the 1/16-inch mesh screening are equivocal and still being evaluated, but tentatively it appears that additional species of mollusks (besides oyster) are

---

[3] This was a municipal water supply rated at 40 psi and delivering about 6 gpm which was donated by the client. Efforts to use a municipal fire hydrant (with appropriate pressure reduction) were abandoned because of seemingly insurmountable bureaucratic obstacles, at least for a short-term testing project.

present which may contribute seasonality data.

At two sites on Hilton Head 38BU861 and 38BU833) the interpretations have been altered by the use of 1/8-inch mesh. The additional time required to use this fine screening seems minor, considering the additional data return. We can see no reason to exclude it from any research program directed at the examination of subsistence patterns.

The final methodological research question involved the **ability to conduct "field analysis"** sufficient to quickly evaluate the potential of sites to address research questions. Expressed in a different way, the goal of testing is not to answer specific questions, but rather to determine whether additional investigations at the site, using specific methods, could answer those questions. Hence there is rarely a great deal of time available for analysis. Any level of accurate, reproducible analysis which can be achieved in the field would reduce the time and funds necessary to recommend sites as either eligible or not eligible for inclusion on the National Register.

Since on this project the ratio of field to lab time was 3:1, it was essential that as much provisional analysis as possible be conducted in the field. The pottery was washed at the water screens, allowing the principal investigator to span the materials in the field. Likewise, the presence of floral and faunal remains was noted in the field, with these materials being bagged and inventoried separately from other artifacts. Provisional auger test maps were made in the field, as the work was being conducted. These various levels of analysis may be routine for other researchers, but represent a departure from our standard field techniques. We found that these additional steps required relatively little additional time (estimated at approximately 3 person hours by the principal investigator and 3 person hours by the field crew). This allowed the data to be correlated quickly in the office, with the development of research questions appropriate to the site actually begun during "brain storming" sessions during the field investigations. This approach, once refined, is likely to result in appreciable savings for clients required to conduct additional testing at potentially eligible sites.

Archaeological Remains and Findings

Auger Tests

The auger tests were examined for information on artifact and midden density, as well as depth of shell midden. Artifact density mapping (Figure 5) revealed only one major concentration, along the eastern edge of the study area. A secondary concentration was found along the western edge of the southern extension. Otherwise there are few peaks, suggesting either that artifact density is very low or, alternatively, that artifact density is closely associated with the shell middens themselves.

When the auger test data is used to plot the shell middens based on shell weights, one major concentration is found along the eastern edge of the northern study area (Figure 6), with no other clearly defined middens identified at the 20 foot interval. Somewhat better definition was achieved when the auger test points were used as elevation points for a computer generated topographic map (Figure 7). With this data it is possible to identify two middens -- including the one previously identified on the basis of shell weight and a second midden to the northwest. The topographic high on the southeastern edge of the examined area is the result of a major tree throw, not cultural activity.

When the artifacts recovered from the auger tests are examined (Table 1) the site appears dominated by what we have tentatively termed St. Catherines pottery, although the artifact densities are so modest as to make statistical comparisons inappropriate. Small sherds dominate the collection (accounting for 56.5% of the assemblage), followed by St. Catherines wares (30.4% of the assemblage). Non-ceramic artifacts are limited to several fragments of animal bone, recovered from a single auger

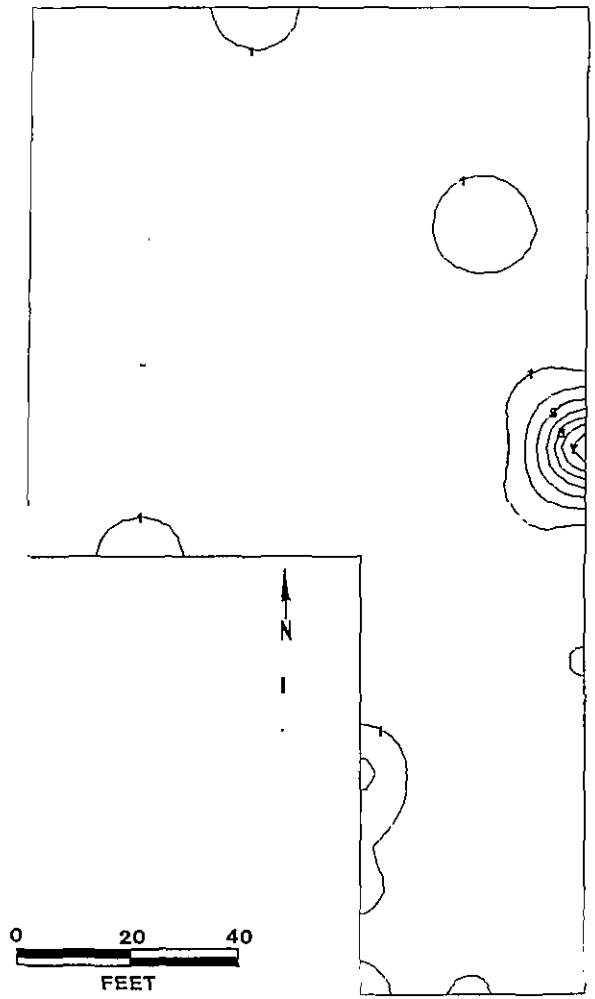


Figure 5. Artifact density mapping at 20-foot intervals.

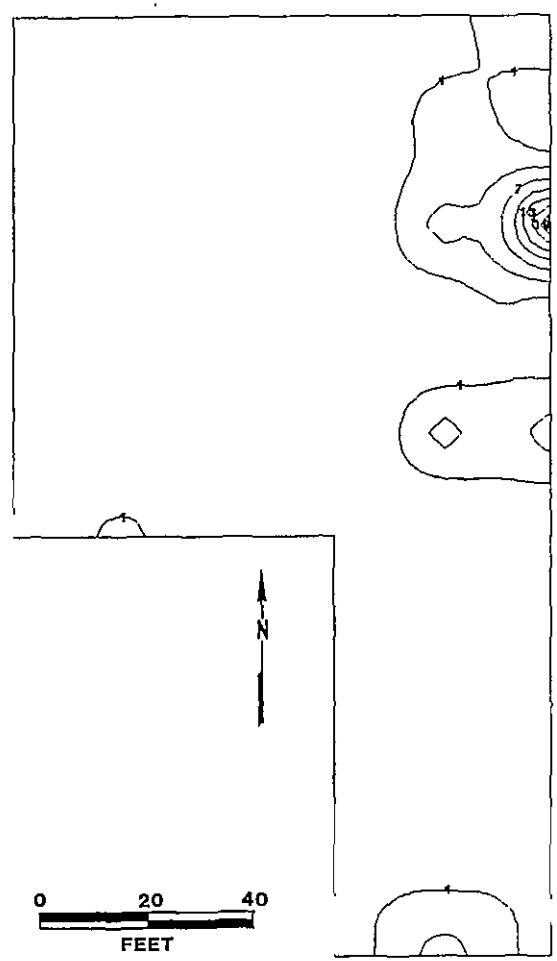


Figure 6. Shell density by weight in pounds at 20 foot intervals.

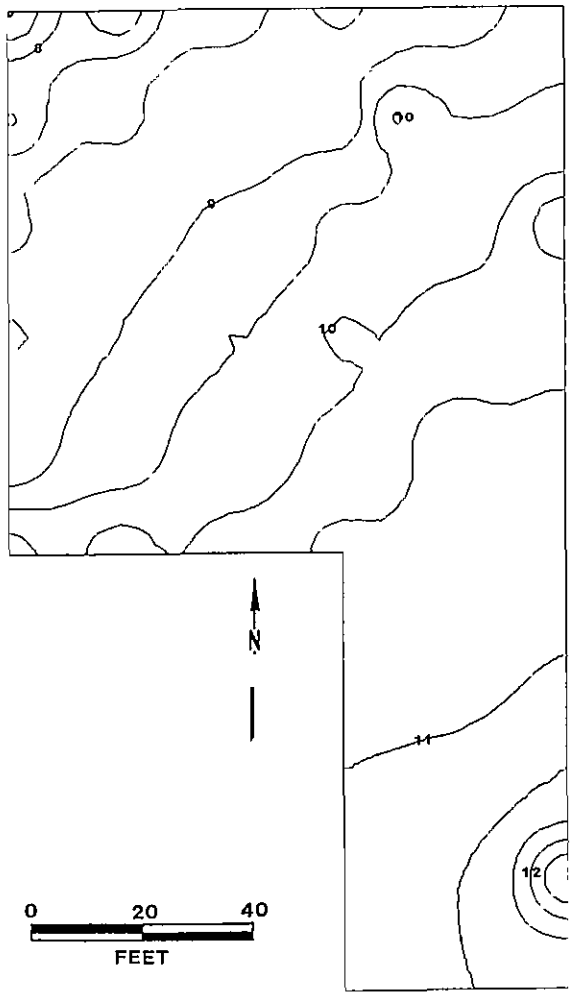


Figure 7. Topographic map of study area at 0.25 foot interval.

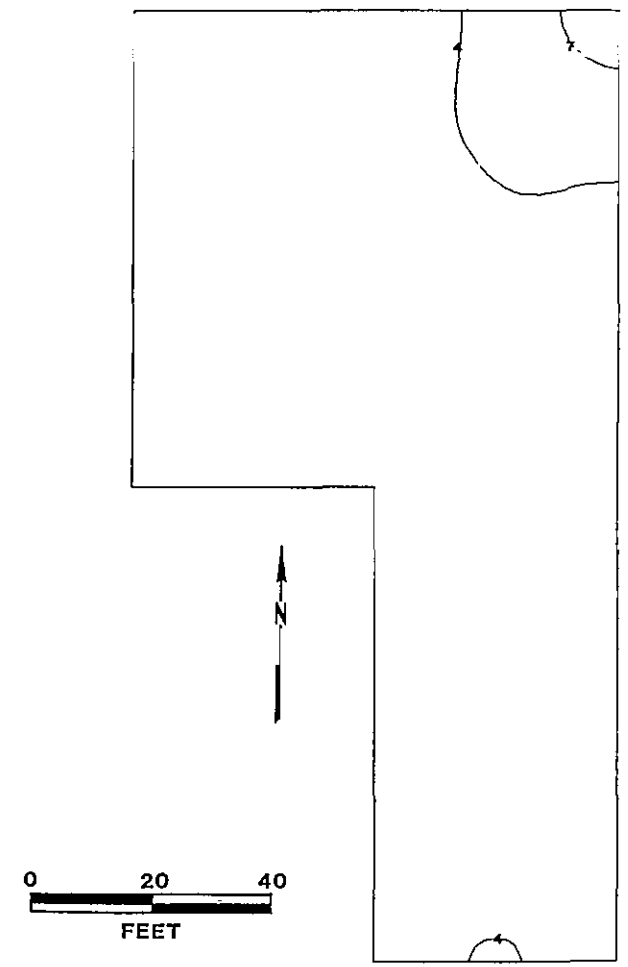


Figure 8. Shell density by weight in pounds at 40 foot intervals.

Table 1.
Artifacts Recovered from Auger Testing

AT	Bone	Refuge	Deptford	St. Catherines	Small
3					1
5					2
12	2			6	
23					2
24				1	
26					1
33		2			
35					1
36			1		
38					1
42					1
49					2
50					1
51					1
Totals	2	2	1	7	13

test (and associated with St. Catherines pottery).

Without belaboring the obvious, the auger testing successfully contributed some very important information, for example the location of at least one midden and a better understanding of artifact density. The 20-foot testing interval also provided much better definition than would have been achieved at, for example, 50 foot intervals. Figure 8 illustrates shell weights using data from every other auger test (approximating a 50 foot interval data set). The selected interval of 20 feet, however, was successful at identifying *only a third of the middens* eventually identified from a combination of auger testing, visual inspection, and topographic surveying. The midden northwest of the one shown on Figure 6 was not identified because the 20-foot auger test interval completely straddled the midden, which measured only about 15 feet in diameter. This suggests that auger testing at an interval of 15 to 10 feet is necessary to provide clear information on midden location and size **(which in turn can be used to judge site complexity and organization)**.

When all of these data are examined as a whole it appears that artifact density is low throughout the area studied, although typically the artifacts present are associated with specific middens. In other words, there is little indication, excepting the one location on the eastern edge of the site, that artifacts are found in non-midden areas. Artifacts appear to be associated with midden or near-midden areas, perhaps reflecting limited post-depositional movement. If this is correct (and it can be tested by intensive excavations) it will allow a more complete understanding of the activities associated with specific middens.

Excavation Units

A series of four 5-foot test pits were excavated as part of this testing program. Two were placed in identified midden areas (one in the near center of a midden, the other closer to the toe or edge) and two were excavated in essentially non-midden areas, although some shell was present even in these excavations.

Test Pit 1 was placed to investigate the shell midden identified through both shell weights and

topographic elevation on the eastern edge of the site (the southeast corner being 18.7 feet from Auger Test 13 and 9.0 feet from Auger Test 24). The unit revealed the edge of a dense shell midden about 0.6 foot in depth, overlying a thin lens of tan sand grading into yellow sand. A probable tree stain was identified in the southeast corner of the unit, otherwise no features were identified. The unit produced a total of 369 pounds of shell (dominated by oyster, with noticeable amounts of ribbed mussel and minor amounts of whelk and clam). The artifact assemblage included almost entirely St. Catherines Cord Marked sherds (the only exception was one Refuge Plain sherd obtained from the basal tan sand). Also recovered from the ¼-inch dry screening was a quantity of carbonized hickory nutshell fragments and wood charcoal, suitable for dating. Faunal material included both mammal remains (deer) from the ¼-inch screening and fish vertebra from the 1/8-inch mesh. Testing at this midden, therefore, documents the presence of a uniform assemblage, materials suitable for radiocarbon dating, ethnobotanical remains, and faunal materials.

Test Pit 2 was placed to explore the midden observed northwest of the one investigated by Test Pit 1 (the southeast corner being 4 feet from Auger Test 26 and 18.8 feet from Auger Test 27). Excavations revealed a dense shell midden 0.6 foot in depth overlying a lens of tan sand. The midden, while about the same depth as that examined in Test Pit 1, produced 436 pounds of shell, indicating a denser midden deposit. At the base of the excavations, along the western edge of the unit, a possible feature was encountered, measuring 2.6 feet north-south. Pottery was less common in this unit, but still revealed an assemblage clearly dominated by St. Catherines cord marked wares. Fish bone was again found in the 1/8-inch mesh and wood charcoal was recovered from both the ¼-inch dry screening and 1/8-inch water screening. Testing at this midden, while documenting a reduced artifact assemblage, revealed ecofacts very similar to those found in Test Pit 1. In addition, the identification of a feature indicates that sub-midden deposits are likely present and intact.

Test Pit 3 was placed to explore what appeared to be a non-midden area situated between Test Pits 1 and 2 (the southeast corner being 18.6 feet from Auger Test 24 and 6.8 feet from Auger Test 23). The excavations revealed slightly more complex stratigraphy, including a Zone 1a consisting of gray-tan sand with little shell and Zone 1b consisting of tan sand with larger quantities of shell (probably representing the toe of the second midden, investigated by Test Pit 2). Only 74 pounds of shell was recovered from the unit, qualifying this excavation as a non-midden area. Artifact density was about equal to that found in the middens and again St. Catherines pottery dominated the collection. Floral and faunal material was not present, probably because of the reduced shell content was unable to buffer the natural soil acidity, reducing the potential for preservation.

Test Pit 4 was excavated at the western edge of the site (being 7 feet from Auger Test 6 and 15.7 feet from Auger Test 5) in an area through not to contain defined midden, although a nearby fire lane indicated the presence of shell. The excavations revealed what may be the toe of a partially plowed midden extending east from the excavations. The profile revealed a uniform layer of gray-brown sand (representing recent humus development) overlying tan sand or gray sand and shell. At the base of the midden (a maximum of 0.5 foot in depth) is a yellow sand subsoil. A total of 169 pounds of shell were recovered from this unit, the bulk coming from the midden along the eastern edge of the square. Ceramics were relatively common, primarily representing St. Catherines wares (except for the Stallings pottery found in the basal yellow sand). Ecofacts, such as floral and faunal material, were not found, probably because of the limited shell present to aid in preservation.

Summary and National Register Eligibility Recommendation

These excavations are clearly too limited to offer a realistic synthesis of the site. However, they were sufficient to reveal that the site is dominated by pottery from one ware-group or phase. They further revealed the presence of preserved midden, as well as sub-midden features. The midden was found to contain both ethnobotanical and faunal remains (in addition to the shells themselves).

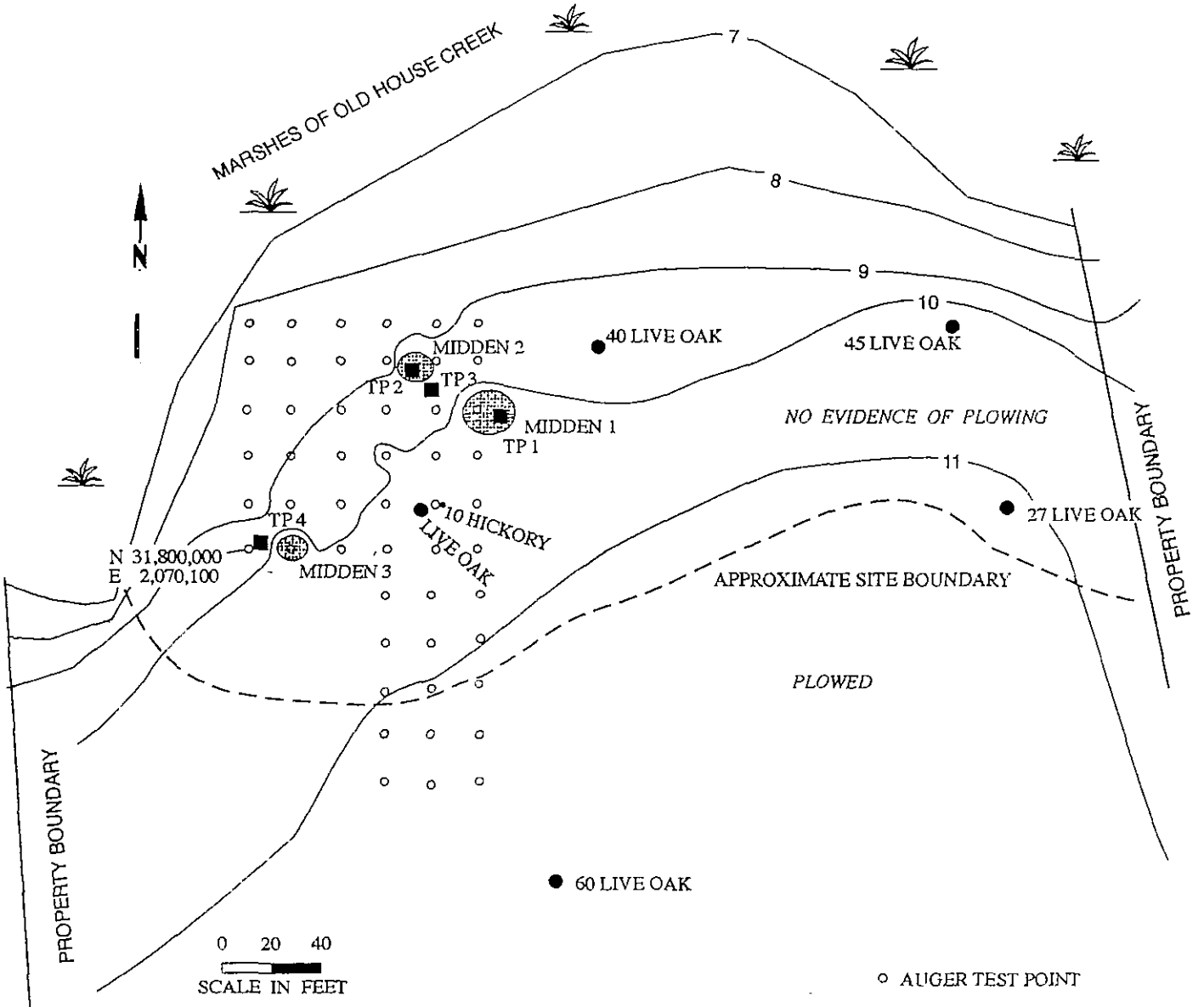


Figure 9. Excavations at 38BU861.

Consequently, the data sets present at the site include:

- ceramics, suitable for paste studies and fabric analysis,
- ethnobotanical remains, suitable for microenvironmental reconstructions, seasonality dating, and radiocarbon determinations,
- faunal materials, suitable for dietary reconstructions and possible seasonality dating,
- shellfish, suitable for seasonality studies and also, as an assemblage, for micro-environmental reconstructions, and
- features, potentially offering sealed contexts for cross-checking oyster seasonality using clam data, as well as offering functional data and the ability for sealed context dating.

The auger tests, excavations, and land form evaluation also assisted in better delimiting the site boundaries. Based on the best information available it appears that the site core is confined to the area about 200 to 250 feet of the marsh edge. Shell continues to the south, or inland, but this area has been plowed, resulting in extensive mixing and a reduction in site integrity. The western boundary, at least for the purposes of this study, appears to be at the small slough cutting south into the property at the western tract edge. The site continues to the east, onto an adjacent parcel. This area to the east has not been examined and will not be considered in the development of this research design.

The site is recommended as eligible for inclusion on the National Register of Historic Places based on criteria D: that a site may "have yielded, or may be likely to yield, information important in prehistory or history." We believe that this significance is at the local level, since the information the site can contribute is meaningful primarily in the development of local syntheses and contexts. Further, the testing documented that 38BU861 possesses integrity, defined as *National Register Bulletin 15* as "the ability of a property to convey its significance."

The broad aspects of location, setting, materials, and feeling are all appropriate to the nature of this property. There is integrity of location since the site contains discernable middens, features, and artifacts, all in primary context. The portion of the site which evidences extensive plowing, and associated loss of locational integrity, is not considered as part of the eligible site. Setting traditionally include such elements as topographic features (the adjacent slough), views (especially of the associated Old House Creek marsh), vegetation (with the presence of several specimen trees protected by the Town of Hilton Head Island), all of which contribute to the site's integrity. There is integrity of materials, based on the presence of features, a single component ceramic assemblage, and presence of floral and faunal materials. Finally, the property has integrity of feeling since in its current rural, undeveloped state it clearly conveys a historic sense of the property during the prehistoric period. Finally, it may also be argued that the site has clear integrity of association, since there is a clear connection between the data sets and the importance of this period in South Carolina history.

The concluding section of this report will briefly outline the important research questions the site's data sets are expected to address and comment on the potential for substantive answers.

CULTURAL REMAINS

Brief Overview of Artifacts

The only artifacts identified during this testing phase are ceramics. Within this category the dominant ware is what we have tentatively chosen to call St. Catherines -- a fine paste with large quantities of finely divided clay or grog fragments. The surface decoration is limited to cord marking. Other wares present, Stallings, Refuge, and possibly Deptford, are all found in small quantities and in the lower, non-midden levels.

From a research perspective the dominance of St. Catherines pottery is significant. It offers the potential to examine a single component site, reducing the potential that features or other remains are associated incorrectly. In other words, at a site with Deptford, Cape Fear (using Anderson et al.'s 1982 typological categories) and St. Catherines pottery there is always the chance that any particular assemblage of floral or faunal remains may be associated with any one of the three wares. It is difficult to examine subsistence, settlement, or functional questions from the perspective of one phase. At 38BU861 it is possible, with much greater assurance, to speak in terms of St. Catherines subsistence strategies or St. Catherines settlement patterns.

Just as importantly, the presence of one ceramic ware allows detailed fabric and paste analysis to be examined at a midden specific level. In fact a variety of detailed analytic techniques, such as estimated vessel equivalency, can be applied to the collection. Such research is based on the assumption that different cultural groups may be distinguished on the basis of distinct fabric types, twists, or other attributes.

Table 2.
Artifacts Recovered from Excavations

	TU1	TU2	TU3	TU4	TU4, trow
Stallings Plain					4
Refuge Plain	1				
Deptford UID		1			
St. Catherines Cord Mark	17	3	5	13	
Small sherds	17	6	10	20	
Fossilized wood			1		
Fossilized bone			3		
Shotgun shell			1		
Pipestem			1		
Key hole cover			1		
Total	35	10	22	33	4

Brief Overview of Ecofacts

There are three broad categories of ecofacts recovered from 38BU861 -- carbonized ethnobotanical remains, vertebrate faunal remains, and invertebrate remains (principally shellfish,

although a small number of crab remains were also identified).

The ethnobotanical remains consist largely of wood fragments, although at least Test Pit 1 also produced large quantities of carbonized hickory nutshell fragments. These materials are capable of providing some information suitable for environmental reconstructions (although there is not necessarily a direct correlation of wood species identified and prehistoric availability, both because of intentional selection for specific purposes and also the self-pruning capability of the trees themselves). In addition, food remains such as nutshells are important for both better understanding dietary reconstructions and also for evaluating the potential for seasonal occupation.

The vertebrate faunal remains consist of both large mammals (deer has been identified from the recovered materials) and fish (not yet identified by species). These remains are obviously significant for the information they contribute in such traditional areas as meat yield and biomass, necessary for dietary reconstructions. In addition, competent analysis will also provide equally significant data on diversity and equitability -- providing a clearer picture of the importance of the various species. Beyond these techniques, the various species identifications are also essential to understanding the various subsistence choices. Since human behavior is not random, the presence of some fish species (such as bottom feeders), but not others (such as small schooling fish) argues for a distinct subsistence strategy. The microenvironmental zones most frequently used by the animals identified can also assist in our understanding of prehistoric settlement and foraging strategies.

In a very similar sense the shellfish recovered from a site such as 38BU861 are capable of yielding a wide range of information. In the past questions of seasonality have been emphasized, while associated questions of microenvironmental dependence, collection strategies, and over exploitation have received less intensive investigation. The examination of entire assemblages, rather than just one species, has also not received any significant attention.

In sum, the ecofacts offer the potential to examine the lifeways of the prehistoric group from a unified, environmental perspective. Too often in the past investigations have fragmented the analysis, failing either to draw together the wide range of analytic approaches or failing to explore the environmental meaning of the total collection.

SITE SIGNIFICANCE AND SUMMARY

Appropriate Research Questions

These discussions have touched on a wide range of research questions which 38BU861 appears to be able to address, based on the results of this testing program. These questions include issues associated with intra-site patterning and organization, the artifacts present at the site, and the ecofacts primarily associated with the middens. There are additional questions, but we have isolated a series which we feel are most likely to be successfully addressed through further research and which offer the greatest potential for making substantive contributions to the discipline.

Intra-Site Patterning

It seems unlikely that the placement of middens is totally random. Their absence on the poorly drained soils bordering the tract to the west would seem to confirm that at least topographic position played a role. However, it is impossible to determine the nature of the patterning, much less its meaning, without an effort to plot the location of individual middens. Consequently, one research goal will be **to identify the shell middens present on at least a portion of the property under investigation.** It seems likely that expanding the existing auger test grid to the east and south, incorporating an area of 200 feet east-west by 200 feet north-south (0.9 acre) will allow an adequate sample of the site to be explored (this represents approximately 50% of the estimated site area within the study tract). The previous investigations have revealed that an auger test interval of at 20 feet, and preferably 10 feet, will be necessary to achieve this goal, but that the site is sufficiently intact to clearly reveal individual midden locations.

This level of auger testing will most likely not be adequate to base any substantive conclusions on the cultural associations of the middens, or the nature of their associated ecofacts. Consequently these will not be major research orientations of this phase of the work, although the data will be collected, and evaluated, where present. More significant sources of information will be shell weight, gross artifact counts, and topographic elevation.

The auger testing will allow a series of three middens to be selected for more intensive investigation. Perhaps of even greater importance, **it will offer a view of a major site area, allowing estimates of total middens, distance from each other, distance from marsh, and orientation (if they are not circular).** For the first time it will be possible to estimate, based on a realistic sample, total middens and probable relationships. In the past the location of discrete middens composing the larger site complex have not been explored; **consequently this research offers a unique perspective which refocuses the discipline on the concept of Trigger's (1978:176) community layout or organization.** Trigger points out that the investigation of such community layouts is essential if the archaeologist wishes, as we presume the discipline does, to understand the total cycle of settlement patterning based on complementary distributions.

Midden Research

Site 38BU861 offers the potential to extend research topics at the midden level **through more detailed radiocarbon dating tied to specific middens with specific cultural remains, through larger excavation areas incorporating both midden and adjacent non-midden area, and by careful control of artifact and ecofact recovery.**

The goal of the radiocarbon dating is to determine the range of occupation dates from several discontinuous middens. A site occupied for only a short period of time should evidence dates falling within at least one or two sigma deviations of each other. A site occupied by a number of groups over a longer period of time will exhibit a greater range of dates. The radiocarbon dating can cross-check conclusions drawn from detailed analysis of the cordage associated with the pottery.

The goal of incorporating both midden and adjacent non-midden areas into the excavation is to explore the settlement at a micro-community level, approaching that of an individual household, or episodal, level. Obvious questions include the distribution of artifacts around and in the midden and the dispersion of shell which might suggest reoccupation of the site. The former is useful to identify specific activity areas and reconstruct various activities or actions (such as the breakage and scattering of a vessel), while the latter is useful to explore the deposition and growth of the midden.

The goal of controlling artifact and ecofact recovery is obviously to maximize data return. This can be achieved by appropriate use of the most cost-effective recovery techniques which are adequate to address the questions outlined. Specifically this would include ¼-inch dry-screening of midden soil followed by water screening subsamples through 1/8- and 1/16-inch mesh; excavation of at least a sample of features; and collecting a wide range of potential (but thus far largely unexplored) data sets, such as pollen samples.

The presence of carbonized materials in the midden indicates that radiocarbon dating can be pursued on charcoal, rather than on what we believe to be less reliable shell[4]. Consequently, the research goal of additional dating is achievable at 38BU861. Likewise, the site exhibits few, if any, areas lacking integrity. Consequently it should be possible to examine adjacent midden and non-midden areas virtually anywhere on the site. However, the close interval auger testing provides additional assurances that areas of disturbance will not accidently be incorporated. Finally, the testing also demonstrated that 1/8-inch mesh water screening is feasible (there is a source of water and it can be adequately transferred to the site) and prudent (if it were not for the fine screening, **no** fish remains would have been recovered).

Artifact Research

Since the primary artifact present at the site is pottery it stand to reason that **ceramic analysis should be thorough and comprehensive.** Recent investigations by Chicora Foundation in Florence at 38FL249 reaffirm the potential of ceramic analysis to offer new and fresh information about seemingly traditional sites (Trinkley et al. 1993). **One specific research topic includes an intensive investigation of ceramic fabric or paste using macro-analytic techniques[5] for information on typological refinement, correlation with radiocarbon dating, and functional interpretation of the pottery vessels.** Perhaps the most valid typological question is whether the St. Catherines ware can be convincingly separated from the other grog, clay, and sherd tempered wares such as Wilmington and Hanover, or whether a type-variety system as suggested by David Anderson is the most appropriate

---

[4] Obviously another research goal could be the comparison of shell and charcoal dates, in order to verify and control differences, or alternatively to demonstrate that no statistically significant differences occur during this period. It seems appropriate to address substantive issues of temporal dating prior to moving on to methodological questions, although other researchers may have a different view.

[5] While a variety of chemical and compositional analysis techniques are both appropriate and useful, it seems reasonable to "wring" as much data as possible from less costly approaches such as fabric analysis first -- thus the approach suggested for the study of 38BU861.

and logical means of bringing order to the existing typological constructs. Other questions, however, involve the function of the vessels, based on the presence of interior or exterior smudging and carbon deposits, a clear understanding of exactly what is being dated, and any possible typological associations with seemingly earlier or later wares.

Associated with this is an **equally intensive investigation of the cordage elements found on the pottery.** Using the techniques of cordage twist, angle of twist, and tightness of twist, it is possible to document the manufacture and use of fabric materials no longer present in the archaeological record. Other researchers have argued that cordage may be distinct by ethnic, social, or kin groups, perhaps suggesting that the diversity observed in the archaeological record may reflect social organization. **At 38BU861 it would be appropriate to conduct such studies for comparison within individual middens, between middens, and to other sites.**

The presence of ceramics, principally St. Catherines and almost entirely cord marked, ensures that these research goals can be addressed by the data likely present at 38BU861. Although the quantity of pottery is not exceptionally great in those areas tested, adequate samples should be obtainable for the various studies and levels of comparison suggested.

Ecofact Research

The research goals for the faunal collection includes documentation of species used, biomass, seasonality, diversity, and equitability. These represent research goals essential to our understanding of prehistoric subsistence strategies. Too often faunal studies of similar sites have offered relatively modest conclusions, failing to identify fish by species, or failing to incorporate diversity studies. Of course some of the problems are associated with the unavoidably small sample sizes, yet others reflect nothing more than a failure to obtain the greatest amount of information possible from the resources at hand.

Species identification is of particular concern since an overall goal of this research should be to incorporate all of the ecofact research into an environmental perspective. It is obviously essential to identify faunal materials to the species level if we are to fully understand the environmental implications of the assemblage. Simply put, there is a big difference between predatory fish found singly and schools of small fish feeding on algae. These differences influence methods of capture, areas being exploited, preparation techniques, and scheduling of time and resources.

Our level of ethnobotanical sophistication is not as great, but **careful analysis of collections can still yield important data on tree types associated with the site area and seasonality based on food remains present.** Continued identification of hickory nutshells may serve as an indicator of site type, season, and/or scheduling to maximize resource use. While no major questions are posed for the ethnobotanical materials, their collection not only allows secondary questions to be addressed, but also ensures the availability of materials suitable for radiocarbon dating[6].

A wide range of research questions are appropriate to the shellfish and other invertebrates present at the site. The most common question, of course, is seasonality of the remains. Issues of over-exploitation and environmental niche are equally important, as are questions concerning collection methods and evidence of preparation. What should be done at this site, however, is to

---

[6] We have traditionally selected carbonized hickory nutshell for radiocarbon dating in order to control additional variables, such as the affect of different wood species on the dating, as well as to minimize the chance that non-cultural wood charcoal was being incorporated in the material being dated.

combine these questions into an assemblage wide approach. While oyster may be the most common shellfish, and offer the greatest body of previous research, the other species should also be incorporated. The entire assemblage likely represents materials gathered by the prehistoric occupants in the course of some rational, organized effort. Consequently, the assemblage should be examined for the evidence it can contribute to that collection effort. The collection should be examined from the perspective of new collection techniques and what they can contribute to our understanding of subsistence strategies.

This represents a refocused effort to examine the collection from a solid environmental footing. Where researchers with expertise with particular species can be identified, they should be used, where no experts can be immediately identified the scientific literature should be reviewed for information which may be relevant. Where no such literature exists, the goal of the research should be to highlight the need for further inter-disciplinary investigation. It may be appropriate to involve individuals in the research with a broad background in coastal and marsh ecology to provide a synthetic overview necessary.

It seems clear from the testing that each of these research goals can be effectively addressed by the data sets at 38BU861. The testing has documented the presence of faunal materials, ethnobotanical remains, and shellfish.

Scope of Work Necessary to Address Research Questions

The data necessary to address these questions are present at 38BU861, but they can be accessed only through very specific data collection and analysis techniques. Community or intra-site pattern research requires broad scale, close interval testing -- research not previously conducted at any shell midden site. Investigation of middens to provide data at the household or episodal level will require a level of data collection rarely achieved. Multiple radiocarbon dates will require careful control of stratigraphic profiles and horizontal midden location. Investigation of the full-range of subsistence remains will require 1/8-inch and 1/16-inch mesh water screening. Failing to incorporate these fundamental data collection techniques will pre-program research failure. Consequently, attention to methodological detail is essential to adequate research at 38BU861.

Minimal methodological requirements for the recovery of the specified data sets at this site include:

- close interval (10 to 20-foot) auger testing of about half the site area (approximately 40,000 square feet,
- computer mapping of artifact density, shell weight, and topographic features (at 0.25 foot intervals), and
- water screening of fill through 1/8 and 1/16-inch mesh.

Minimal analytical requirements for the interpretation of the specified data sets at this site will include:

- fabric analysis of all recovered pottery,
- cordage analysis of all cord marked wares,
- radiocarbon dating of multiple shell middens using carbonized materials,

- full analysis of floral, vertebrate faunal, and invertebrate materials with special attention to a cohesive, integrated environmental approach, and

- examination of community level settlement patterns, dispersion of artifacts associated with midden and near midden areas, and comparison of these distributions with artifacts from far midden areas (if present)[7].

To achieve the recommended minimal level of research potential[8] at this particular site it will be necessary to complete the following field tasks:

- conduct 400 12-inch auger tests in an area measuring 200 by 200 feet, screening the fill through ¼-inch mesh,

- prepare a topographic map of the 40,000 square foot study area at 10 foot intervals using a 0.25 foot interval,

- identify individual middens on the basis of topographic features, shell density, and artifact density,

- identify non-midden areas with relatively high[9] artifact density,

- excavate approximately 200 square feet of shell midden at minimally three middens,

- excavate approximately 200 square feet of non-shell midden adjacent to at least two of the studied middens,

- minimally bisect features identified in the course of this work, and

- excavate approximately 200 square feet of non-shell midden areas identified as possessing high artifact density based on the auger study.

The research questions and data recovery plan proposed for 38BU861 address both old, but unresolved, questions such as the typological validity of St. Catherines pottery and new questions, such as the community patterning of one part of the site. The approach also takes common approaches, such as the examination of floral and faunal remains, and adds a "new" dimension, that of an integrated, environmental approach focusing on the total assemblage. The study also combines methodological approaches to attack research questions from several perspectives, such as using both multiple radiocarbon dates and cordage analysis to investigate occupational patterning. The proposed work integrates new approaches, such as the use of the estimated vessel equivalency, into shell midden research. The proposed work challenges assumptions, especially assumptions that shell midden sites

---

[7] Obviously this issue will also draw in data from the other analyses, including artifact analysis, radiocarbon dating, and subsistence studies to arrive at intra-site comparative statements for the individual household or episodal middens.

[8] As previously indicated there are other research questions which this site *could* address, including compositional analysis of the pottery, which have been laid aside until less expensive research goals have been more fully explored.

[9] Based on the initial work we suggest that a density of three artifacts per cubic foot be accepted as the threshold level.

are simplistic and offer little research potential. The data sets defined, the methods proposed to explore those data sets, and the research questions outlined all suggest that shell middens have offered little new information because new approaches have not been integrated into the research.

SOURCES CITED

Anderson, David G.. Charles E. Cantley, and A. Lee Novick

1982 *The Mattassee Lake Sites: Archaeological Investigations Along the Lower Santee River in the Coastal Plain of South Carolina*. Commonwealth Associates, Jackson, Michigan. Submitted to the National Park Service, Interagency Archaeological Services, Atlanta.

Braun, E.L.

1950 *Deciduous Forests of Eastern North America*. Blarison, Philadelphia.

Colquhoun, Donald J.

1969 *Geomorphology of the Lower Coastal Plain of South Carolina*. Division of Geology, S.C. State Development Board, Columbia.

Cooke, C. Wythe

1936 *Geology of the Coastal Plain of South Carolina*. Bulletin 867. U.S. Geological Survey, Washington, D.C.

Croker, Thomas C., Jr.

1978 Longleaf Pine: The Longleaf Pine Story. *Journal of Forest History* 23:32-43.

DePratter, Chester and J.D. Howard

1980 Indian Occupation and Geologic History of the Georgia Coast: A 5,000 Year Summary. In *Excursions in Southeastern Geology*, edited by James D. Howard, Chester B. DePratter, and Robert W. Frey, pp. 1-65. Guidebook 20. Geological Society of America, Atlanta.

Jones, David C.

n.d. Archaeological Survey of A Proposed 20 Acre Development Tract, Hilton Head Island, South Carolina. Brockington and Associates, Atlanta. Ms. on file, Chicora Foundation, Inc., Columbia.

Kurtz, Herman and Kenneth Wagner

1957 *Tidal Marshes of the Gulf and Atlantic Coasts of Northern Florida and Charleston, South Carolina*. Studies 24. Florida State University, Tallahassee.

Mathews, Thomas, Frank Stapor, Jr., Charles Richter, John Miglarese, Michael McKenzie, and Lee Barclay

1980 *Ecological Characterization of the Sea Island Region of South Carolina and Georgia*, volume 1. Office of Biological Services, United States Fish and Wildlife Service, Washington, D.C.

Quitmyer, Irvy

1985 The Environment of the Kings Bay Locality. In *Aboriginal Subsistence and Settlement Archaeology of the Kings Bay Locality*, vol. 2, edited by William H. Adams, pp. 1-32. Reports of Investigations 2. Department of Anthropology,

University of Florida, Gainesville.

Sandifer, Paul A., John V. Miglarese, Dale R. Calder, John J. Manzi, and Lee A. Barclay
1980 *Ecological Characterization of the Sea Island Coastal Region of South Carolina and Georgia*, vol. 3. Office of Biological Services, Fish and Wildlife Service, Washington, DC.

Smith, Lynwood
1933 *Physiography of South Carolina*. Unpublished M.S. Thesis, Department of Geology, University of South Carolina, Columbia.

Stuck, W. M.
1980 *Soil Survey of Beaufort and Jasper Counties, South Carolina*. Soil Conservation Service, U.S. Department of Agriculture, Washington, D.C.

Trigger, Bruce
1978 *Time and Traditions: Essays in Archaeological Interpretation*. Columbia University Press, New York.

Trinkley, Michael
1987 *Archaeological Survey of Hilton Head Island, Beaufort County, South Carolina*. Research Series 9. Chicora Foundation, Inc., Columbia.

1993 *Is There a Future for Shell Midden Research?* Research Contribution 118, Chicora Foundation, Inc., Columbia.

Trinkley, Michael, Debi Hacker, Natalie Adams, and David Lawrence
1992 *Archaeological Data Recovery at 38BU833, A St. Catherines and Savannah Shell Midden Site, Hilton Head Island, Beaufort County, South Carolina*. Research Series 27. Chicora Foundation, Inc., Columbia.

Trinkley, Michael, Debi Hacker, and Natalie Adams
1993 *Life in the Pee Dee: Prehistoric and Historic Research on the Roche Carolina Tract, Florence County, South Carolina*. Research Series 39. Chicora Foundation, Inc., Columbia.

Wenger, Karl F.
1968 Silvics and Ecology of Loblolly-Shortleaf Pine-Hardwood Forests. In *The Ecology of Southern Forests*, edited by Norwin E. Linnartz, pp. 91-98. Louisiana State University Press, Baton Rouge.

Wing, Elizabeth S. and Irvy R. Quitmyer
1985 Screen Size for Optimal Data Recovery: A Case Study. In *Aboriginal Subsistence and Settlement Archaeology of The Kings Bay Locality*, vol. 2: Zooarchaeology, edited by William Hampton Adams, pp. 49-58. Reports of Investigations 2. Department of Anthropology, University of Florida, Gainesville.

Ziegler, John M.
1959 Origin of the Sea Islands of the Southeastern United States. *Geographical Review* 49:222-237.